Remarks

Applicant thanks the examiner for examining the present application and acknowledges the Examiner's restriction to either Group 1 (Claims 1-26) or Group 2 (Claims 27-38). The provisional election on January 19, 2006 of Group 1, Claims 1-26, is hereby affirmed. Accordingly, with entry of this amendment, Claims 1-26 are pending and Claims 27-38 have been withdrawn by the Examiner.

By this amendment, new Claim 39 is submitted for consideration. Support for new Claim 39 can be found in the specification at, for example, page 7, lines 1-4. No new matter is introduced.

Claim 1 has been amended to further specify details about the reactive gas. Support for the amendment can be found in the specification at, for example, page 7, lines 1-4. No new matter is introduced.

Claims 2 and 3 have been amended for purposes of clarity. No new matter is introduced.

Claims 1-26

Peyman et al. do not teach each and every element of independent Claim 1:

The Examiner has rejected independent Claim 1 as being anticipated under 35 U.S.C. § 102(b) by U.S. Patent 4, 312, 575 (Peyman et al.) (Office Action pg. 3). The Examiner's rejection is traversed. A proper anticipation rejection requires that a "reference...teach each and every element of the claim" (MPEP 2131). As discussed below, Peyman et al. fails to teach all the features of Claim 1 and Claim 1 is properly allowable over Peyman et al.

Claim 1 recites a method for increasing the hydrophilicity of a polymer surface "whereby a functionalized polymer surface is obtained." In general, Peyman et al. describe a method of making tightly cross-linked polymer coatings (Peyman et al., abstract). Accordingly, rather than functionalizing the surface of the polymer, as recited in Applicant's Claim 1, the method of Peyman et al. results in the formation of a polymer material that coats the surface of the original polymer. A specific example is found on Column 4, lines 35-37, wherein Peyman et al. describe a polymer "having formed on the surface thereof an ultra-thin, optically-clear, lipid-impermeable, highly oxygen-permeable barrier coating." In other words, the polymer surface is buried by an alternative hydrophilic polymer material of unspecified thickness (Peyman et al., Column 5, lines 3-8). Peyman et al. does not teach the functionalization of the polymer surface, as claimed by the Applicant. For at least this reason, Peyman et al. does not implicitly or expressly teach each and every element of independent Claim 1 as required by 35 U.S.C. §102(b). Accordingly, the Examiner's §102(b) rejection on the basis of Peyman et al. should be withdrawn and such action is respectfully requested.

Buchwalter et al. does not teach each and every element of currently amended Claim 1:

The Examiner has rejected original Claim 1 as being anticipated under 35 U.S.C. § 102(b) by U.S. Patent 5, 340, 451 (Buchwalter et al.) (Office Action pg. 3). Applicant has amended original Claim 1 to further specify that the reactive gas is not activated by a plasma unit. In other words, the reactive gas is not a plasma gas.

Buchwalter et al. do not teach each and every element of currently amended Claim 1. Specifically, Buchwalter et al. does not teach exposing the

nonfunctionalized polymer surface to both a plasma and a reactive gas, wherein the reactive gas is not itself a plasma gas. Rather, as noted by the Examiner, Buchwalter et al. describe the mixing of "a gas or gases comprising a hydrogen containing reducing species" with the "plasma supporting gas" (Buchwalter et al., column 4, lines 33-49). Distinction between the plasma and the reactive gases described by the Applicant can be achieved, for example, by spatially separating the inlets of the plasma and the reactive gas and/or temporally separating the exposures of the plasma and the reactive gas (e.g., sequential exposure of the plasma and the reactive gas).

For at least these reasons, Buchwalter et al. do not implicitly or expressly teach each and every element of currently amended Claim 1. Accordingly, Applicant believes currently amended Claim 1 is allowable and respectfully requests allowance by the Examiner.

Koh et al. and Feurer et al. do not teach each and every element of independent Claim 1:

The Examiner rejects independent Claim 1 as being anticipated under 35 U.S.C. § 102(b) by U.S. Patent 5,783,641 (Koh et al.) (Office Action pg. 4). Similarly, the Examiner rejects independent Claim 1 as being anticipated under 35 U.S.C. § 102(b) by U.S. Patent 4,409,258 (Feurer et al.) (Office Action pg. 6). The Examiner's rejections are traversed in both instances. A proper anticipation rejection requires that a "reference...teach every element of the claim" (MPEP 2131). As discussed below, both Koh et al. and Feurer et al. fail to teach all the features of Claim 1, and Claim 1 is properly allowable over Koh et al. and Feurer et al.

Applicant's Claim 1 claims, in part, exposing a nonfunctionalized polymer surface to a plasma. However, Koh et al. describe a process wherein the polymer surface is irradiated with "ion particles with energy" (Koh et al., abstract and column 5, lines 7-10). Koh et al. do not teach the use of a plasma, but rather an ion beam. Similarly, Feurer et al. describe a process comprising, in part, generating positive ions having kinetic energy and bombarding a polymer surface with the beam (Feurer et al., abstract and column 1, lines 40-50). Feurer et al. do not teach the use of a plasma, but rather an ion beam.

Furthermore, the use of an ion beam, as described by both Koh et al. and Feurer et al., teaches away from the Applicant's claimed invention. Referring to page 3, paragraph 8 of Applicant's specification, an ion beam can suffer from low throwing power and would require a direct line of sight between the ion beam source and the polymer surface to be treated. Accordingly, an ion beam can have a reduced ability to treat surfaces having a complex geometry and surface features.

For at least these reasons, neither Koh et al. nor Feurer et al. implicitly or expressly teaches each and every element of independent Claim 1, as required by 35 U.S.C. § 102(b). Accordingly, the Examiner's § 102(b) rejection of Claim 1 on the basis of Koh et al. and Feurer et al. should be withdrawn and such action is respectfully requested.

Yoshida does not teach each and every element of currently amended Claim 1:

The Examiner rejects independent Claim 1 as being anticipated under 35 U.S.C. § 102(b) by U.S. Patent 5,346,728 (Yoshida) (Office Action pg. 5). Applicant has

amended original Claim 1 to further specify that the reactive gas is not activated by a plasma unit. In other words, the reactive gas is not itself a plasma.

Applicant's currently amended Claim 1 recites, in part, both a reactive gas that is not activated and a plasma. Yoshida describes a method wherein iodine serves effectively as the reactive gas and is a plasma (Yoshida, column 1, lines 41-44; column 2, lines 20-22, etc.). Yoshida does not teach exposing a nonfunctionalized polymer surface to both a plasma generated from a plasma unit as well as a reactive gas that is not activated by the plasma unit, as is claimed in currently amended Claim 1.

For at least these reasons, Yoshida does not implicitly or expressly teach each and every element of currently amended Claim 1. Accordingly, Applicant believes currently amended Claim 1 is allowable and respectfully requests allowance by the Examiner.

Lidel does not teach each and every element of currently amended Claim 1:

The Examiner rejects independent Claim 1 as being anticipated under 35 U.S.C. § 102(b) by U.S. Patent 3,761,299 (Lidel) (Office Action pg. 6). Applicant has amended original Claim 1 to further specify that the reactive gas is not activated by a plasma unit. In other words, the reactive gas is not itself a plasma.

Lidel generally discloses a process for altering polymeric materials by "exposure to a reactive gas which has been activated by radio frequency electromagnetic radiations prior to being directed onto the surface" (Lidel, abstract). Furthermore, Lidel states that the invention is based upon the discovery that when an activator gas and a reactive gas are activated by radio frequency electromagnetic radiation, radicals of the reactive gas species can react with radicals on a polymer surface, which are generated by the activator

gas. Accordingly, Lidel describes a process wherein both the activator gas and the reactive gas are activated species in a plasma.

Lidel does not teach exposing a "nonfunctionalized surface to a plasma from a plasma unit and exposing said nonfunctionalized surface to a reactive gas, wherein the reactive gas is not activated by the plasma unit," as described by Applicant's currently amended Claim 1 and as required for a proper § 102(b) rejection. Accordingly, Applicant believes currently amended Claim 1 to be allowable and respectfully requests allowance by the Examiner.

Dependent Claims 2-26 are also allowable:

The Examiner has rejected dependent Claims 2-26 as being either anticipated by Peyman et al., Buchwalter et al., Koh et al., Feurer et al., Yoshida, or Lidel or as being obvious over Buchwalter et al. in view of Covington or over Feurer et al. in view of Goldenberg et al. Since the instant claims are dependent on currently amended Claim 1, which is believed to be allowable for at least the reasons stated above, they are also believed to be allowable. Further, Claims 2-26 are each independently patentable because of the unique and nonobvious features of the combinations set forth in each claim.

New Claim 39:

New Claim 39 recites, in part, a method of increasing the hydrophilicity of a nonfunctionalized polymer surface comprising "exposing said nonfunctionalized surface to a plasma from a plasma unit" and "exposing said nonfunctionalized surface to a